



PATENT  
ATTORNEY DOCKET NO. 50320/002004

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Megan Kiley  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Hubbell et al.	Confirmation No.:	5598
Serial No.:	10/715,867	Art Unit:	1651
Filed:	November 17, 2003	Examiner:	Deborah K. Ware
Customer No.:	21559		
Title:	BIODEGRADABLE MACROMERS FOR THE CONTROLLED RELEASE OF BIOLOGICALLY ACTIVE SUBSTANCES		

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Applicants submit the references listed on the enclosed Form PTO-1449, and five copies of references marked with an asterisk.

A copy of a search report from a corresponding European application is also enclosed.

Submission of this statement is not a representation that a search has been made, nor is the inclusion of information in this statement an admission that the information is material to patentability.

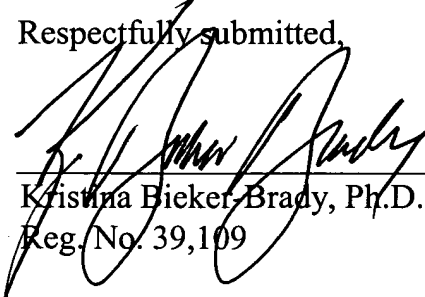
Under 35 U.S.C. § 120, this application relies on the earlier filing date of application serial number 09/689,575, which was filed on October 12, 2000.

The references listed on the enclosed PTO form 1449 were submitted to and/or cited by the Office in the prior application and, therefore, copies of these references are not provided for this application. However, the references marked with an asterisk were not previously cited, and copies are enclosed with the exception of U.S. Patent Nos. 5,252,701 and 6,303,148.

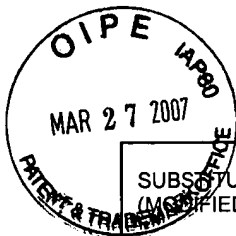
This statement is being filed after a first Office action on the merits, but before the mailing of a final Office action or a Notice of Allowance. A check for \$180.00 in payment of the late submission fee set forth in 37 C.F.R. § 1.17(p) is enclosed.

If there are any charges or any credits, please apply them to Deposit Account No. 03-2095.

Date: March 19, 2007

Respectfully submitted,  
  
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Sheet 1 of 3

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

Attorney Docket No.

50320/002004

Serial No.

10/715,867

Applicant

Jeffrey A. Hubbell et al.

Filing Date

November 17, 2003

Group

1651

IDS Filed

March 19, 2007

Customer No.

21559

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT  
(Use several sheets if necessary)

(37 C.F.R. § 1.98(b))

## U.S. PATENT DOCUMENTS

Examiner's Initials	Document Number	Publication Date	Patentee or Applicant	Class	Subclass	Filing Date (If Appropriate)
	4,741,872	May 3, 1988	De Luca et al.			
	4,804,691	Feb. 14, 1989	English et al.			
	4,898,734	Feb. 6, 1990	Mathiowitz et al.			
	5,149,543	Sept. 22, 1992	Cohen et al.			
	5,232,984	Aug. 3, 1993	Hubbell et al.			
	5,232,701	Oct. 12, 1993	Jarrett et al.			
	5,320,624	Jun. 14, 1994	Kaplan et al.			
	5,380,536	Jan. 10, 1995	Hubbell et al.			
	5,410,016	Apr. 25, 1995	Hubbell et al.			
	5,462,990	Oct. 31, 1996	Hubbell et al.			
	5,529,914	Jun. 25, 1996	Hubbell et al.			
	5,567,435	Oct. 22, 1996	Hubbell et al.			
	5,567,440	Oct. 22, 1996	Hubbell et al.			
	5,573,934	Nov. 12, 1996	Hubbell et al.			
	5,595,971	Jan. 21, 1997	Mitchell			
	5,626,863	May 6, 1997	Hubbell et al.			
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	5,631,015	May 20, 1997	Bezwada et al.			
	5,654,007	Aug. 5, 1997	Johnson et al.			
	5,763,371	Apr. 7, 1998	Samain et al.			
	5,753,219	May 19, 1998	Cleland et al.			

EXAMINER

DATE CONSIDERED

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with the next communication to applicant.

SUBSTITUTE FORM PTO-1449 (MODIFIED)  U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)  (37 C.F.R. § 1.98(b))	Attorney Docket No.	50320/002004
	Serial No.	10/715,867
	Applicant	Jeffrey A. Hubbell et al.
	Filing Date	November 17, 2003
	Group	1651
	IDS Filed	March 19, 2007
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U.S. PATENT DOCUMENTS						
Examiner's Initials	Document Number	Publication Date	Patentee or Applicant	Class	Subclass	Filing Date (If Appropriate)
	6,303,148 B1	Oct. 16, 2001	Hennink et al.			
FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION						
Examiner's Initials	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation (Yes/No)
	WO 92/06678	Apr. 30, 1992	WIPO			
* ✓	WO 93/16687	Sep. 2, 1993	WIPO			
* ✓	WO 93/17669	Sep. 16, 1993	WIPO			
	WO 95/31479	Nov. 23, 1995	WIPO			
	WO 96/11671	Apr. 25, 1996	WIPO			
	WO 96/29370	Sept. 26, 1996	WIPO			
	WO 96/32149	Oct. 17, 1996	WIPO			
* ✓	WO 97/05185	Feb. 13, 1997	WIPO			
	WO 97/41833	Nov. 13, 1997	WIPO			
	WO 97/44013	Nov. 27, 1997	WIPO			
	WO 98/22093	May 28, 1998	WIPO			
OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PLACE OF PUBLICATION)						
	Clark et al., "Long-acting Growth Hormones Produced by Conjugation with Polyethylene Glycol," The Journal of Biological Chemistry 271(36):21969-21977 (1996)					
	Cleland, "Protein Delivery from Biodegradable Microspheres," Pharmaceutical Biotechnology, Chapter 1, Protein Delivery Physical Systems (Sanders and Hendren, eds.) Plenum Press, New York pgs. 1-43 (1997)					
	Gonda, "Aerosols for Delivery of Therapeutic and Diagnostic Agents to the Respiratory Tract," Critical Reviews in Therapeutic Drug Carrier Systems 6(4):273-313 (1990)					

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(37 C.F.R. § 1.98(b))		Customer No.	21559

OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PLACE OF PUBLICATION)	
	Hill-West et al., "Inhibition of thrombosis and intimal thickening by <i>in situ</i> photopolymerization of thin hydrogel barriers," Proc. Natl. Acad. Sci. 91:5967-5971 (1994)
	Hubbell, "Hydrogel systems for barriers and local drug delivery in the control of wound healing," Journal of Controlled Release 39:305-313 (1996)
	Hubbel, "Biomaterials in Tissue Engineering," Biotechnology 13:565-576 (1995).
	Johnson et al., "A month-long effect from a single injection of microencapsulated human growth hormone," Nature Medicine 2(7):795-799 (1996).
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*	Kim et al., "Drug Release from Biorodible Hydrogels Composed of Poly-Epsilon-Caprolactone/Poly (Ethylene Glycol) Macromer Semiinterpenetrating Polymer Networks" Archives of Pharmacal Research, Natl., Fisheries Universities 18:18-21 (1995).
	Krishnamurthy et al., "Stability of Proteins during Manufacture and Release from Biodegradable Polymers" BioPharm, pages 32-35, January 1998.
	Langer, "New Methods of Drug Delivery," Science 249:1527-1533 (1990).
	Laursen et al., "Continuous Infusion Versus Daily Injections of Growth Hormone (GH) for 4 Weeks in GH-Deficient Patients," Journal of Clinical Endocrinology and Metabolism 80(8):2410-2417 (1995).
	Lee et al., "In Vivo Characterization of Sustained-Release Formulations of Human Growth Hormone," The Journal of Pharmacology and Experimental Therapeutics 281(3):1431-1439 (1997).
	Ron et al., "Controlled release of polypeptides from polyanhydrides," Proc. Natl. Acad. Sci. USA 90:4176-4180 (1993).
*	Sawhney et al., "Bioerodible Hydrogels Based on Photopolymerized Poly(ethylene glycol)-co-poly( $\alpha$ -hydroxy acid) Diacrylate Macromers," Macromolecules 26(4):581-587 (1993).
	West et al., "Photopolymerized Hydrogel Materials for Drug delivery applications," Reactive Polymers 25:139-147 (1995).
*	European Search Report mailed January 18, 2005 (EP 04 02 9002).

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